

What is claimed is:

¹
~~49~~. In a process for producing a product using a material which is electrochemically loaded with an isotopic fuel, a method of controlling the loading which includes in combination:

supplying said isotopic fuel to said material,
providing means for loading said isotopic fuel into said material to
saturate said material,
then providing means for producing a change in the active quantity
of said isotopic fuel within said material,
creating thereby a catastrophic diffusion flux of said isotopic fuel
within said material.

no material
desired result

²
~~50~~. A method as in claim ~~49~~ wherein said material is a member of the group consisting of palladium, Groups IVb, Vb, and rare earth elements.

³
~~51~~. A method as in claim ~~49~~ wherein said second material is a member of the group consisting of deuterium or deuterons.

NA

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~~52~~. In a process using an isotopic fuel loaded into a material, a two-stage method for controlling the loading which includes in combination:

supplying said isotopic fuel to said material,
providing means for loading said isotopic fuel into said material to
saturate said material,
then providing means for producing a change in the active
quantity of said isotopic fuel within said material,
creating thereby a catastrophic diffusion flux of said isotopic fuel
within said material.

desired result

⁵
~~53~~. A method as in claim ~~52~~ wherein said material is a member of the group consisting of palladium, Groups IVb, Vb, and rare earth elements.

⁶
~~54~~. A method as in claim ~~52~~ wherein said second material is a member of the group consisting of deuterium or deuterons.

rule 1.21

Sub B10

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Sub B11

Sub B12

⁷
~~55~~. A method as in claim ~~52~~⁴, where the material is loaded electrochemically.

⁸
~~56~~. A method as in claim ~~52~~⁴, where the said means to produce a change in the active quantity of said isotopic fuel within said material is by a change in temperature of said material.

⁹
~~57~~. A method as in claim ~~52~~⁴, where the additional step is taken of obstructing the diffusion flux of said fuel by a diffusion barrier located within said material.

¹⁰
~~58~~. A method as in claim ~~52~~⁴, where the additional step is taken of removing said product produced.

¹¹
~~59~~. A method as in claim ~~58~~¹⁰ wherein said product is heat and said means of removing heat utilizes a member of the group of high thermal conducting devices, including a thermal pipe, a diamond filament, and a polymer filled with diamonds.

¹²
~~60~~. A method as in claim ~~58~~¹⁰ wherein said means of removing said product utilizes an applied magnetic field.

¹³
~~61~~. An apparatus to produce a product using a material loaded with an isotopic fuel, which includes in combination:
means to supply said isotopic fuel to said material,
means to load said isotopic fuel into said material to saturate said material,
means to produce a change in the active quantity of said isotopic fuel within said material,
means thereby to produce a catastrophic diffusion flux of said isotopic fuel within said material.

¹⁴
~~62~~. An apparatus as in claim ~~61~~¹³ wherein the isotopic fuel is a member of the group consisting of deuterium or deuterons.

¹⁵
~~63~~. An apparatus as in claim ~~61~~¹³ wherein said said material is a member of the group consisting of palladium, Groups IVb, Vb, and rare earth elements.

rule 1.21

- ¹⁶
~~64~~. An apparatus as in claim ~~61~~¹³ wherein said means to load said isotopic fuel into said material is electrochemical.
- ¹⁷
~~65~~. An apparatus as in claim ~~61~~¹³ wherein additional means are provided to obstruct the diffusion flux of said isotopic fuel by a diffusion barrier located within said material.
- ¹⁸
~~66~~. An apparatus as in claim ~~65~~¹⁷ wherein said diffusion barriers are multiple and are arranged as alternating layers of diffusion barriers.
- ¹⁹
~~67~~. An apparatus as in claim ~~61~~¹³ wherein the means produce a change in the active quantity of said isotopic fuel within said material is by a change in temperature.
- ²⁰
~~68~~. An apparatus as in claim ~~61~~¹³ which includes a high modulus incompressible structural barrier surrounding said material filled with said isotopic fuel.

~~ABIS~~